## AMENDMENTS TO THE CLAIMS

In the claims:

Claims 1-24 were in the PCT application as filed. Please amend claims 2-5, 7-10, 12-15, and 17-20, and add new claims 25-28, as shown in the following listing of claims, which will replace all prior versions and listings of claims in the application.

**Listing of claims:**

1 (original). A method for the production of differentiated hematopoietic cells comprising:

a) culturing bone marrow stem cells under conditions that promote synchronous progression through the cell cycle;

b) contacting the cells with at least one growth factor or cytokine at a predetermined phase of the cell cycle; and

c) subculturing the cells until differentiated hematopoietic cells are produced.

2 (currently amended). The method of claim 1, wherein the at least one growth factor cytokine comprises G-CSF, GM-CSF, [[and]] or steel factor.

3 (currently amended). The method of ~~any one of claims 1-2~~claim 1, wherein culturing the cells under conditions that promote synchronous progression through the cell cycle comprises culturing the cells in the presence of steel factor, thrombopoietin, and FLT3-ligand.

4 (currently amended). The method of ~~any one of claims 1-3~~claim 1, wherein the step of subculturing the cells is carried about for about 14 days.

5 (currently amended). The method of ~~any one of claims 1-4~~claim 1, wherein the predetermined phase of the cell cycle is mid-S phase.

6 (original). The method of claim 5, wherein mid-S phase occurs about 32 hours after initiation of the culturing of the stem cells under conditions that promote synchronous progression through the cell cycle.

7 (currently amended). The method of ~~any one of claims 1-6~~claim 1, wherein the differentiated hematopoietic cells comprise megakaryocytes.

8 (currently amended). The method of ~~any one of claims 1-6~~claim 1, wherein the differentiated hematopoietic cells comprise platelets.

9 (currently amended). The method of ~~any one of claims 1-6~~claim 1, wherein the differentiated hematopoietic cells comprise proliferative granulocytes.

10 (currently amended). The method of ~~any one of claims 1-4~~claim 1, wherein the predetermined phase of the cell cycle is late S phase.

11 (original). The method of claim 10, wherein late S phase occurs about 40 hours after initiation of the culturing of the stem cells under conditions that promote synchronous progression through the cell cycle.

12 (currently amended). The method of ~~any one of claims 1-4 or 10-11~~claim 1, wherein the differentiated hematopoietic cells comprise mature (non-proliferative) granulocytes.

13 (currently amended). The method of ~~any one of claims 1-12~~claim 1, further comprising isolating the differentiated hematopoietic cells from the subculture.

14 (currently amended). A method of treating a subject having cytopenia comprising administering to the subject a therapeutically effective amount of the differentiated hematopoietic cells produced according to the methods of ~~any one of claims 1-13~~claim 1.

15 (currently amended). A method of preventing cytopenia in a subject comprising administering to the subject a therapeutically effective amount of the differentiated hematopoietic cells produced according to the methods of ~~any one of claims 1-13~~claim 1.

16 (original). The method of any one of claims 14-15, wherein the subject has or is at risk for developing cytopenia associated with cancer chemotherapy or radiation therapy.

17 (currently amended). The method of any one of claims [[14-16]] 14-15, wherein the subject has or is at risk for developing cytopenia associated with a bone marrow transplant.

18 (currently amended). The method of any one of claims [[14-17]] 14-15, wherein the cytopenia is thrombocytopenia.

19 (currently amended). The method of any one of claims [[14-2-]] 14-15, wherein the cytopenia is granulocytopenia.

20 (currently amended). Hematopoietic cells produced by the methods of any one of claims [[1-13]] 1, 14, or 15.

21 (original). The hematopoietic cells of claim 20, which are macrophages.

22 (original). The hematopoietic cells of claim 20, which are platelets.

23 (original). The hematopoietic cells of claim 20, which are proliferative granulocytes.

24 (original). The hematopoietic cells of claim 20, which are mature (non-proliferative) granulocytes.

25 (new). A method for the production of differentiated hematopoietic cells comprising:

a) culturing bone marrow stem cells under conditions that promote synchronous progression through the cell cycle;

b) contacting the cells with at least one growth factor or cytokine at a predetermined phase of the cell cycle, wherein:

i) the growth factor comprises G-CSF, GM-CSF, or steel factor; and

ii) the predetermined phase of the cell cycle is mid-S phase or late S phase;

c) subculturing the cells until differentiated hematopoietic cells are produced; and

d) isolating the differentiated hematopoietic cells from the subculture.

26 (new). A method of treating a subject having cytopenia comprising administering to the subject a therapeutically effective amount of the isolated differentiated hematopoietic cells produced according to the method of claim 25.

27 (new). A method preventing cytopenia in a subject comprising administering to the subject a therapeutically effective amount of the differentiated hematopoietic cells produced according to the method of claim 25.

28 (new). Isolated hematopoietic cells produced by the method of claim 25.